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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,855	09/19/2003	Hiroshi Wada	9319S-000552	5774

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	**PAPER NUMBER**
2629	

MAIL DATE	DELIVERY MODE
10/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/666,855	WADA ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

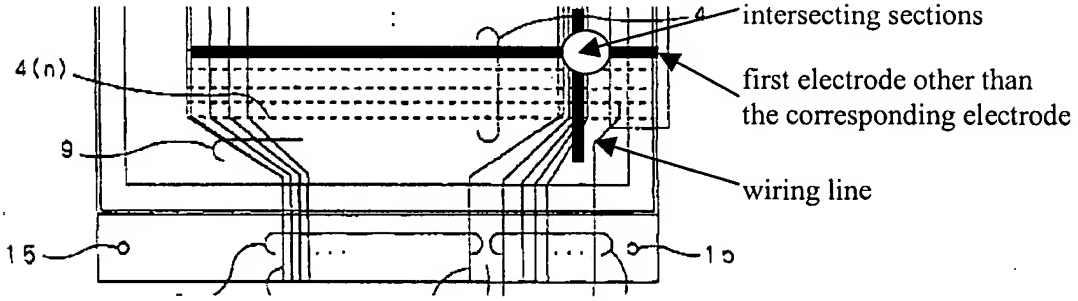
Response to Arguments

1. The Applicants' arguments filed on August 02, 2007 have been fully considered.

In the arguments, the Applicants pointed out that the prior art of record (US 6,806,938, herein after "Asakura") does not teach intersecting sections at which each wiring line intersects at least one first electrode other than the corresponding electrode, in the display area.

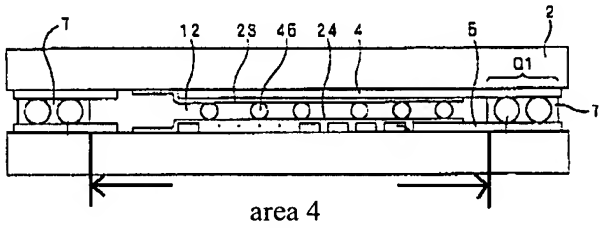
Examiner respectfully disagrees.

As shown in drawing 1 (which is equivalent to fig. 1a of Asakura) provided below, Asakura teaches intersecting sections at which each wiring line intersects at least one first electrode other than the corresponding electrode.



Drawing 1

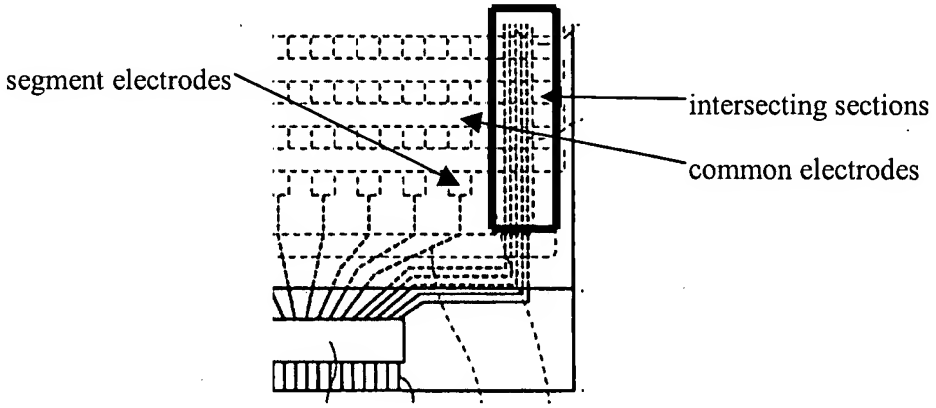
The Applicants argued that, in the device of Asakura, the intersecting area is not in the display area since Asakura refers the area 3 as a display area [Asakura: fig. 2] while the area 3 does not include the intersecting sections. The Applicants further pointed out that the area 4 of Asakura [drawing 2 provided on page 3 of this Office Action, which is equivalent to fig. 2 of Asakura] cannot be referred as a display area since the wiring pattern is provided between the area 3 and the sealing material and thus the area in which the conductor or the connection is formed cannot be a display area.



Drawing 2

Examiner respectfully disagrees.

As shown on drawing 3 [which is equivalent to fig. 1 of the instant Application], the liquid crystal device of the instant Application includes wiring lines and common electrodes in the intersecting sections, but does not include segment electrodes in the intersecting sections.



Drawing 3

It is noted that image to be displayed in the device is formed or driven by the voltages applied across the segment electrodes and the common electrodes. In other words, image cannot be formed or displayed in the area where there is no segment electrode or no common electrode. Therefore, if the display area is construed as the area where an image is formed or displayed, the display of the instant Application does not teach the intersecting sections in the display area since the intersecting sections do not include segment electrodes.

Furthermore, since there is no explanation regarding the definition of the display area in the specification of the instant Application, it would be reasonable to refer the area 4 of Asakura [drawing 2 provided on page 3 of this Office Action] as a display area since the area 4 is the entire area inside the

sealing material, which is the definition of the display area provided by the Applicants in the previous arguments.

The Applicants further pointed out that Asakura is silent as to the voltage applied to the intersecting sections.

Examiner respectfully disagrees.

According to the claim, the second effective value is based on a difference between a first voltage, the voltage applied to each of the first electrodes through the corresponding wiring line when selected, and a voltage supplied to one of the second electrodes for turning on a pixel. In other words, the second effective value is the voltage applied across the pixels of the display. The role of the second effective value is to control the liquid crystals included in the pixels to display images. If there is any other voltage which is greater than the second effective value, within the display, the liquid crystals included in the pixels would be controlled by the voltage greater than the second effective value rather than the second effective value, and thus the display would malfunction. Therefore, it is inherent in the display of Asakura that the first effective value is smaller than the second effective value.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1, 3, 4, 6, 7, 9, 10,** and **11** are rejected under 35 U.S.C. 102(e) as being anticipated by Asakura et al. (US 6,806,938, herein after "*Asakura*").

As to **claims 1** and **3**, Asakura teaches a liquid crystal device [col. 1 lines 15-17] having liquid crystals between a first substrate ("*glass substrate 2*") [fig. 2] and a second substrate ("*glass substrate 1*") that faces the first substrate through a sealing material ("*sealing resin 7*") [col. 7 lines 58-62], in which pixels corresponding to intersections of a plurality of first electrodes ("*transparent electrodes 4*") [fig. 2] on the first substrate and a plurality of second electrodes ("*segment electrodes 10*") on the second substrate are turned on or off in accordance with voltages applied to the first electrodes and the second electrodes [col. 7 lines 38-55, emphasis on lines 53-55], the liquid crystal device comprising:

wiring lines ("*wiring pattern 5*") [fig. 2], provided on the second substrate ("*glass substrate 1*"), each wiring line corresponding to one of the first electrodes ("*transparent. electrode 4*") on the first substrate [fig. 5A], the wiring lines being connected to the corresponding first electrodes and each having a part extending in a display area ("*area 4*") [drawing 2 provided on page 3 of this Office Action] surrounded by inside edges of the sealing material ("*sealing resin 7*") [fig. 5A], each wiring line intersecting at least one first electrode other than the corresponding first electrode at intersecting sections, in the display area [drawing 1 on page 2 of this Office Action, which is equivalent to Asakura's fig. 1A]; and a drive circuit ("*driver IC*") applying a voltage to the first electrodes ("*transparent electrode 4*") through the wiring lines ("*wiring pattern 5*").

Asakura inherently teaches each of the first electrodes being supplied with a first voltage when selected and being supplied with a second voltage when not selected since it is required for Asakura's liquid crystal display to drive each of the first electrodes selectively depending on the content of the image to be displayed and thus it is required for the driver to supply different voltages alternately to the first electrodes in order to turn on/off the pixels including the first electrodes to display, the desired image.

Furthermore, Asakura inherently teaches a first effective value of a voltage applied to the liquid crystals at the intersecting sections being smaller than a second / third effective value of a voltage applied

to a pixel for turning on / off the pixel, wherein the first effect value is based on a difference between the first voltage and the second voltage and the second / third effect value is based on a difference between the first voltage and a voltage supplied to one of the second electrodes for turning on / off a pixel since the effective value of a voltage applied to the Pixel for turning on / off the pixel is the voltage controlling the alignment of the liquid crystals constituting the display operation of the liquid crystal display and the alignment state/mode of liquid crystals is determined depending on whether the effective value of the voltage applied to the pixel is greater or less than a certain threshold voltage. When the effective value of the voltage applied to the liquid crystals at cross sections is greater than the effective value of the voltage applied to the pixel for turning on / off the pixel, the actual effective value of the voltage applied to the pixel is effected and compensated by the effective value of the voltage applied to the liquid crystals at cross sections and thus overall effective value of the voltage applied to pixel is changed, which causes an unexpected display operation in terms of gradation control for the display device.

Therefore, it is required for Asakura's display to specify the first effective value of a voltage applied to the liquid crystals at the cross sections being smaller than a second / third effective value of a voltage applied to a pixel for turning on / off the pixel in order to display images properly.

As to **claim 4**, all of the claim limitations have already been discussed with respect to the rejection of claims 1 and 3 since if the first effective value of the voltage is smaller than both of second and third effect values of the voltage, then the first effective value of the voltage is also smaller than the intermediate value of the voltage between the second effective value of the voltage and the third effective value of the voltage.

As to **claim 6**, Asakura teaches an electronic equipment ("*liquid crystal display device*") provided with the liquid crystal device, according to claim 1 [col. 1 lines 15-17].

As to **claim 7**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

As to **claim 9**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 2, 8**, and **12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura in view of Nomura et al. (US 6,236,385, herein after "*Nomura*").

As to **claim 2**, all of the claim limitations have already been discussed with respect to the rejection of claim 1 (determining that the first effective value of the voltage applied to the liquid crystals at the cross sections becomes smaller than the second effective value of the voltage applied to the corresponding pixel for turning on the pixel) except for determining at least one of a duty ratio and a bias ratio to set the first effect value of the voltage applied to the liquid crystals at the cross sections.

Asakura does not teach determining at least one of a duty ratio and a bias ratio to set the effective values of the voltages applied to the liquid crystals.

However, Nomura [col. 4 lines 38-44] teaches a method of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use duty ratio of Asakura's driving signal in order to set Asakura's first effective value of the voltage to be smaller than the second effective value of a voltage, as taught by Nomura, since it is well known in the art to use the duty ratio of a driving signal instead of using the amplitude of the driving signal in order to change the voltages applied to liquid crystals.

As to **claim 8**, all of the claim limitations have already been discussed with respect to the rejection of claim 3 (determining that the first effective value of the voltage applied to the liquid crystals at the cross sections becomes smaller than the third effective value of the voltage applied to the corresponding pixel for turning off the pixel) except for determining at least one of a duty ratio and a bias ratio to set the first effect value of the voltage applied to the liquid crystals at the cross sections.

Asakura does not teach determining at least one of a duty ratio and a bias ratio to set the effective values of the voltages applied to the liquid crystals.

However, Nomura [col. 4 lines 38-44] teaches a method of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use duty ratio of Asakura's driving signal in order to set Asakura's first effective value of the voltage to be smaller than the third effective value of a voltage, as taught by Nomura, since it is well known in the art to use the duty ratio of a driving signal instead of using the amplitude of the driving signal in order to change the voltages applied to liquid crystals.

As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 3 (determining that the first effective value of the voltage applied to the liquid crystals at the intersecting sections becomes smaller than the third effective value of the voltage applied to the corresponding pixel for turning off the pixel) except for determining at least one of a duty ratio and a bias ratio to set the first effect value of the voltage applied to the liquid crystals at the intersecting sections.

Asakura does not teach determining at least one of a duty ratio and a bias ratio to set the effective values of the voltages applied to the liquid crystals.

However, Nomura [col. 4 lines 38-44] teaches an idea of determining / changing the voltages applied to liquid crystals by adjusting the duty ratio of a driving signal, in a liquid crystal display.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use duty ratio of the driving signal of Asakura in order to set the first effective value of the voltage of Asakura to be smaller than the third effective value of a voltage, as taught by Nomura, since it is well known in the art to use the duty ratio of a driving signal instead of using the amplitude of the driving signal in order to change the voltages applied to liquid crystals.

6. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura in view of Morimoto (US 6,181,406).

Asakura teaches a liquid crystal device.

Asakura does not teach the liquid crystal device including a light-shielding layer provided on one of the first substrate and the second substrate so as to overlay the cross sections.

However, Morimoto [fig. 4] teaches a light-shielding layer ("*light-shielding layer 63* and *64*") provided on one of the first substrate ("*opposite substrate 22*") and the second substrate ("*array substrate 20*") so as to overlay the cross sections between one of the wiring lines and first electrodes other than the first electrode connected to the corresponding wiring line among the plurality of first electrodes [col. 8 lines 43-49].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a light-shielding layer in the liquid crystal display device of Asakura, as taught by Morimoto, in order to block / shield any interfering lights and thus to optimize the display output contrast of the display device.

Conclusion

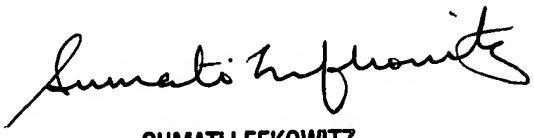
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

October 11, 2007

- s.m.



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